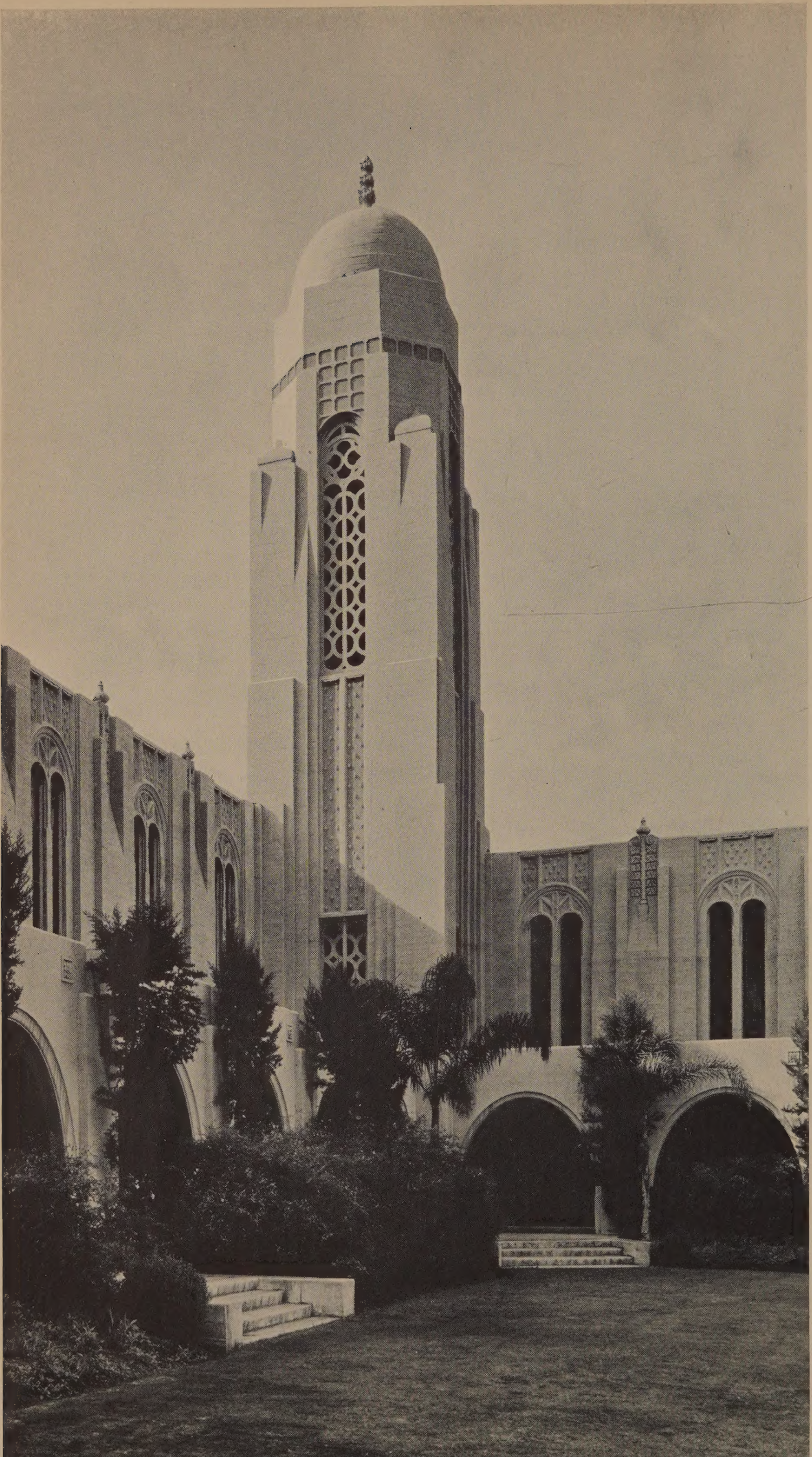
ARCHITECTURAL CONCRETE

VOLUME ONE NUMBER FOUR



CHURCH OF JESUS CHRI
OF LATTER DAY SAINTS

Los Angeles, Calif.

Pope and Burton, Architects

Lynch-Cannon Engineering C
Contractors

Structural elements of this beaut
church—see cover—are apparent in
architectural design both on the exte
and interior, and all are reinforced c
crete. The dominant tower that r
above the intersection of the arca
overlooks the patio where attrac
planting emphasizes the grace and u
of the design.

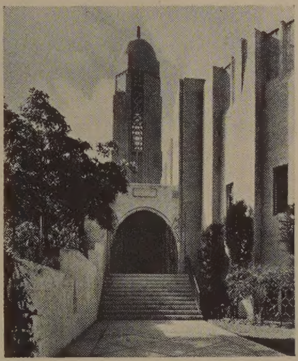
Architectural CONCRETE

Latter Day Saints Church

By HAROLD W. BURTON

THE followers of the Mormon faith are vigorous pioneers. In a little over 100 years they have established their church and extended their religion from coast to coast. Against tremendous obstacles they have built and peopled towns and cities. Their success in making a great desert bloom was the beginning of a new method of land irrigation and reclamation. They have prospered in commerce and industry and advanced their culture in schools and colleges of their own building.

Characteristic of every Mormon community has been the fine, strong architecture of their church buildings. As the followers of Joseph Smith traveled westward in the early years of the nineteenth century they built temples in Ohio and Illinois which, for the time, were magnificent edifices. More splendid and architecturally interesting are the Temple and Tabernacle at Salt Lake City, Utah. Thus a high standard has been set for Latter Day Saints Churches wherever they are built, a standard of beauty, dignity and strength. However, there has been no standard of architectural style to fetter the choice of design or the use of construction materials for these churches.


Entrance to one of the arcades.

This history and this freedom are the background of the Latter Day Saints Church in Los Angeles. The design of the building follows no generally accepted architectural styles, and there was no attempt to reproduce any effects definitive of a historical period or of the materials of the period. In the design of this church, concrete is frankly employed as being worthy in itself and is not made to imitate any other material either in form or appearance.

The plan is ell shaped, with two major units each occupying a wing. The chapel, used strictly for religious services, fronts on Manhattan Place, and the social hall faces Country Club Drive. Both are served by a common entrance foyer located at the intersection of the two wings. Arcades paralleling each wing afford covered passageways from each of the streets to the entrance foyer over which the tall tower rises in the angle formed by the arcades. A beautifully planted patio occupying the corner of the lot may be seen from both the chapel and social hall through a series of folding doors opening into the arcades. Another unit, a two story wing containing the Sunday School class rooms and church offices, is parallel to but separated from the chapel by wide corridors. The whole plant is attractively landscaped to match the beautiful setting of stately palms and deodar cedars which border both fronting streets.

Concrete as a medium for architectural expression, presents an unlimited field for the architect. The desire in this instance was to achieve a design expressing the plasticity of the medium and one which would be readily adaptable and easily and economically executed. To create a feeling of simplicity and dignity in keeping with the purpose of the building was essential. Ornamentation is sparingly used and elementary in character, principally of the surface type to lend interest and texture to portions of the wall areas. Design motifs are few in number, being repeated often enough for continuity, but sufficiently varied to avoid monotony. All necessary structural elements are apparent in the architectural design both on the exterior and interior.

All structural members, including exterior walls, are reinforced concrete. The chapel 42 ft. by 120 ft., is spanned with rigid, reinforced concrete frames spaced 14 ft. on centers. The clear height from floor to crown of arch is 35 ft. Reinforced concrete beams supporting the sloping roof decks are provided between the frames which are designed to resist lateral thrusts.

The social hall, 54 ft. by 112 ft., is spanned by reinforced concrete girders spaced 14 ft. on centers. The girders are horizontal members of rigid frames, amply haunched to allow for lateral thrusts. The curtain walls between supports are 8 in. thick and are reinforced vertically and horizontally in both faces of the walls.

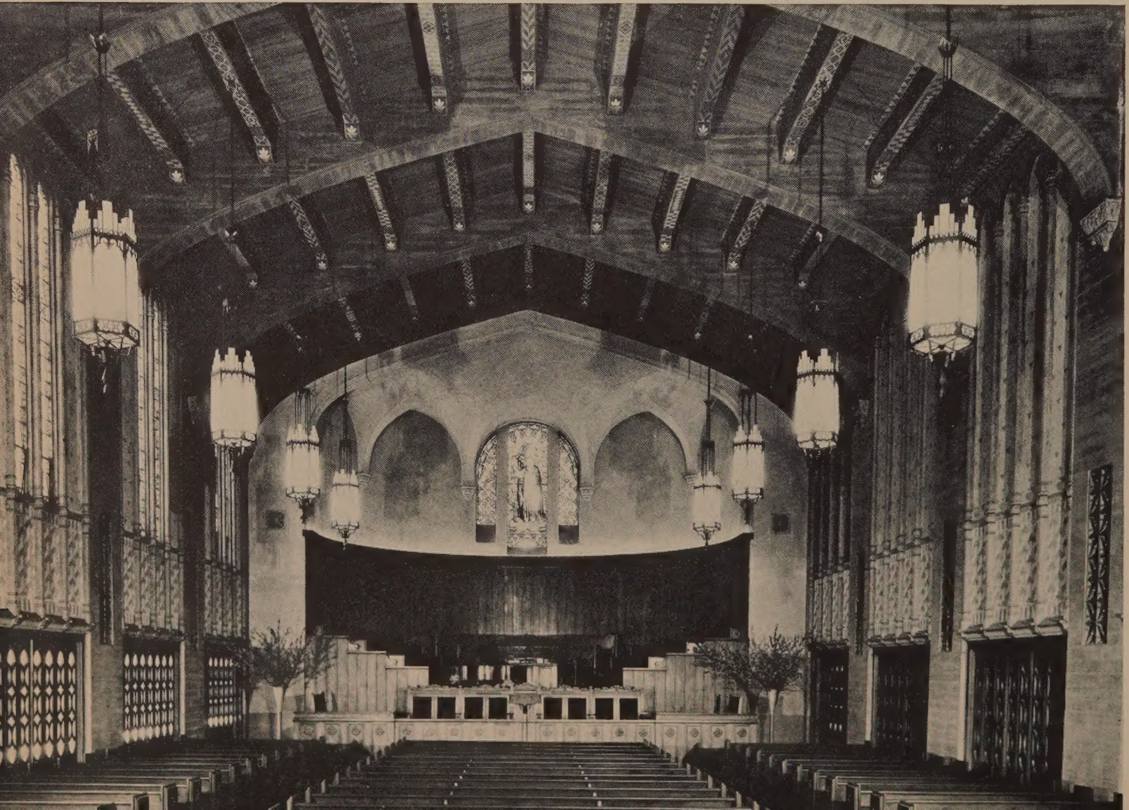
With the exception of the window grilles and tower screens, all ornamental portions of the work were cast against plaster waste molds incorporated with the wood forms. Plain wall surfaces were cast against wood forms made of surfaced and sized 1 x 6 square edged boards. All forms were accurately and substantially constructed so that all surfaces have uniform texture and scale.

Extreme care was taken in selection of aggregates which were accurately proportioned throughout. Careful attention was paid to water content of the concrete to insure uniform mix, and an admixture was used to improve the workability of the concrete. Plaster waste molds were shellacked and uniformly greased before placing concrete and splashings and scum were never allowed to accumulate and dry on the forms. A placing schedule requiring uniform raises was adhered to strictly and construction joints at convenient intervals between daily runs were provided.

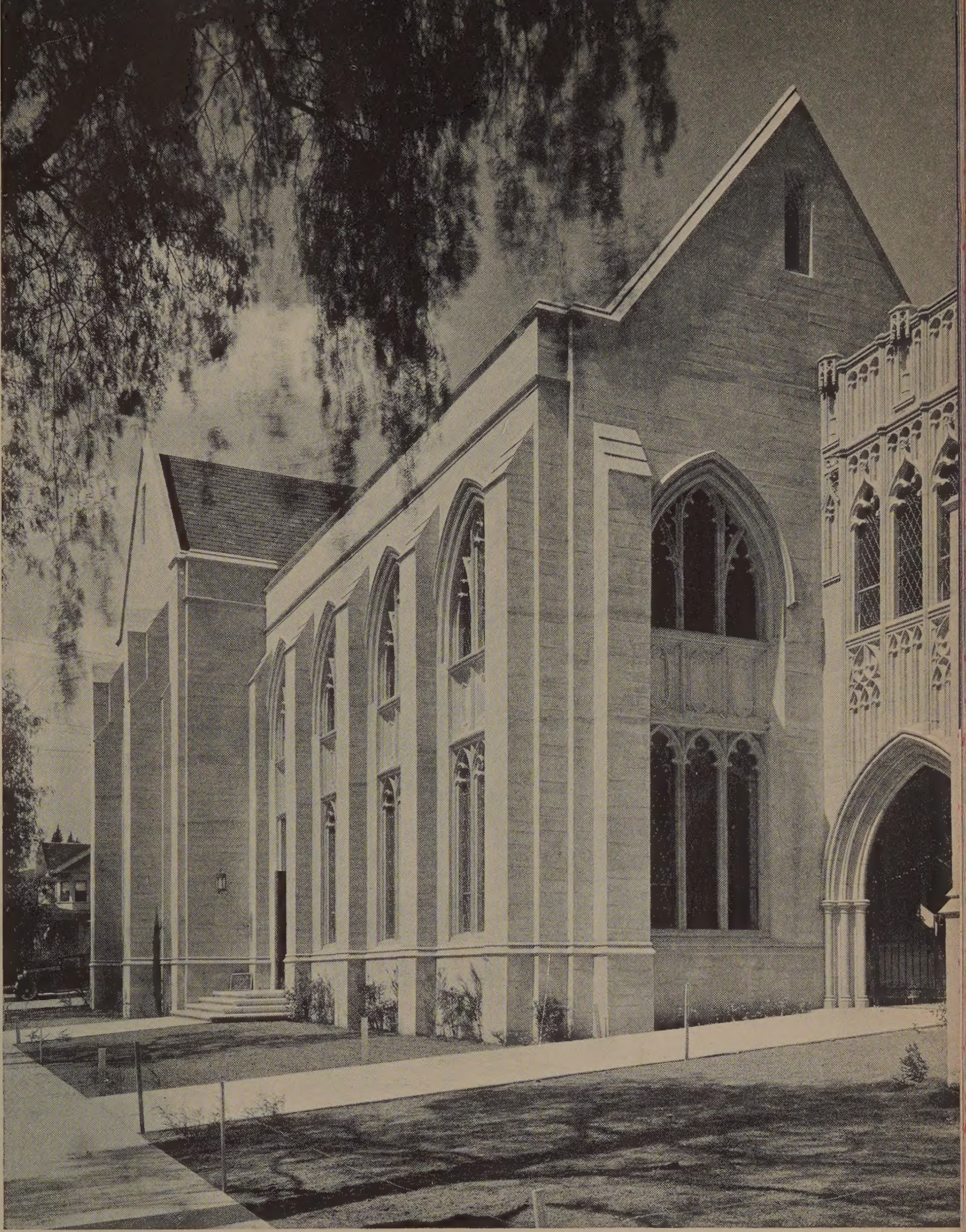
The concrete was thoroughly puddled and forms were constantly vibrated by tapping blows with wooden mauls on both sides during placement. Tie wires for the forms were sloped outward to prevent moisture from penetrating the walls, and were cut back and neatly pointed at completion. The forms were left in place until the concrete was thoroughly hardened before stripping. Exterior surfaces were then given a thin brush coat of cement to which a waterproofing compound was added. No attempt was made to obliterate form markings or to change the natural texture of the concrete.

Interior walls, beams and frames—excepting certain portions which are covered with acoustic materials—are left the same as the exterior wall surfaces. In place of the cement wash finish, interior exposed concrete surfaces are decorated with transparent stains, painted ornament and glazes.

Built in 1928 at a cost of 27.3 cents per cu. ft., exclusive of carpets, draperies, furniture and other equipment, the building stands as illustrated in the accompanying photographs. With the exception of the landscaping, the building now looks as it did the day the builders completed their work. In its seven years it has been subjected to severe tests without a sign of damage. Owing to the materials used in its construction, maintenance cost has been minimum.



The chapel of Latter Day Saints Church, is spanned by rigid reinforced concrete frames having soffits formed by two intersecting parabolas. The exposed concrete of walls, arches, beams and roof slabs is decorated with transparent stains, painted ornament and glazes.



Chapel elevation of First M. E. Church, Hollywood, Calif., whose walls reveal the harmony of architectural style and material —modernized Gothic and monolithic concrete. Barber and Kingsbury, architects; J. C. Bannister, contractor.

Two Churches in Modernized Gothic

By PAUL KINGSBURY

IT IS not heresy to state that the pointed arch is almost as symbolical of religious institutions as the cross. Gothic has been so long associated with church construction that, to the lay mind, it is not an architectural form but a religious expression. In other fields of art, motifs derived from this architectural style are used freely to symbolize religious themes. Hence, it may be said that Gothic now belongs more to the church than to architecture, even though its distinguishing features—vaults, arches and buttresses—were originally developed out of structural necessities and material limitations.

This right of possession, however, does not exclude the skill and direction of the architect in the design of Gothic churches. Upon him rests the task of adapting this traditional form to new, more durable and more economical materials; to modernize, tastefully, those revered decorative elements which no longer have structural and functional value. Two churches in modernized Gothic, which the writer offers in demonstration, are the First Methodist Episcopal Church of Hollywood, Calif., and the McCarty Memorial Christian Church of Los Angeles, designed in collaboration with the late Thomas P. Barber.

Hollywood, popularly suspected of being the most wicked and worldly city in America is, paradoxically, a quiet, peace-loving little hamlet, nestling against the sometime green hills—a community actually containing more

Almost reminiscent of the soaring pinnacles of Monsalvat are the tower and finial spires of Hollywood's First M. E. Church.

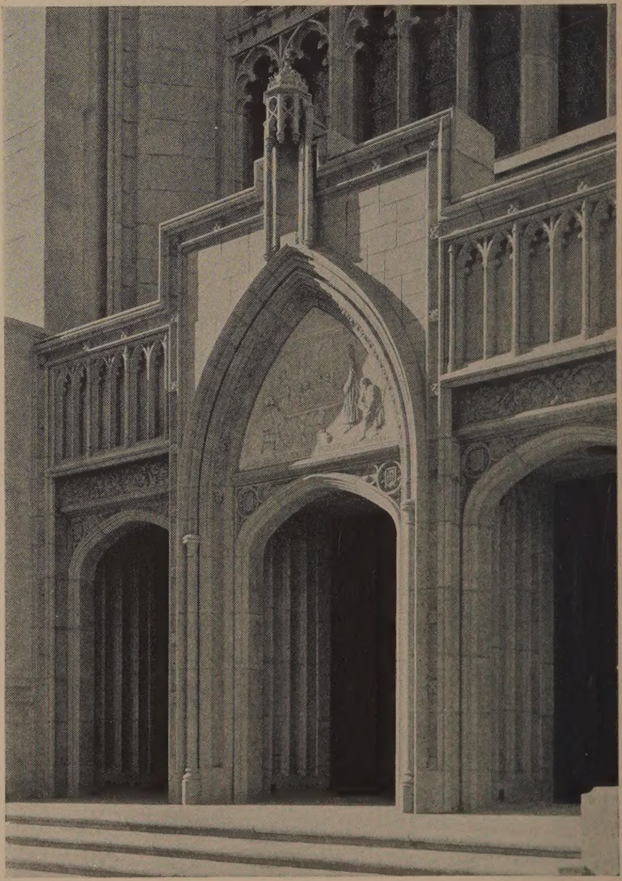
churches per square foot of corporate area than any other place on earth. And they are not small chapels, but large, well supported and attended churches. It is not surprising, therefore, that the units comprising the First Methodist Church occupy a whole city block. These structures, four in number, are grouped about an open court and are; (1) main auditorium, (2) administration and school unit, (3) Sunday School unit, and (4) assembly and recreation unit. The first three units are fireproof, reinforced concrete and steel frame construction. The fourth was built before the other structures and is of steel frame and wood filler wall construction and does not enter into this discussion.

The style of architecture of this church group is modernized, perpendicular English Gothic. The reason for selecting Gothic was because of church traditions; the reason for English Gothic, because the cradle of Methodism was in England; and the reason for modernized perpendicular style was to harmonize with the material adopted for the exterior—exposed concrete.

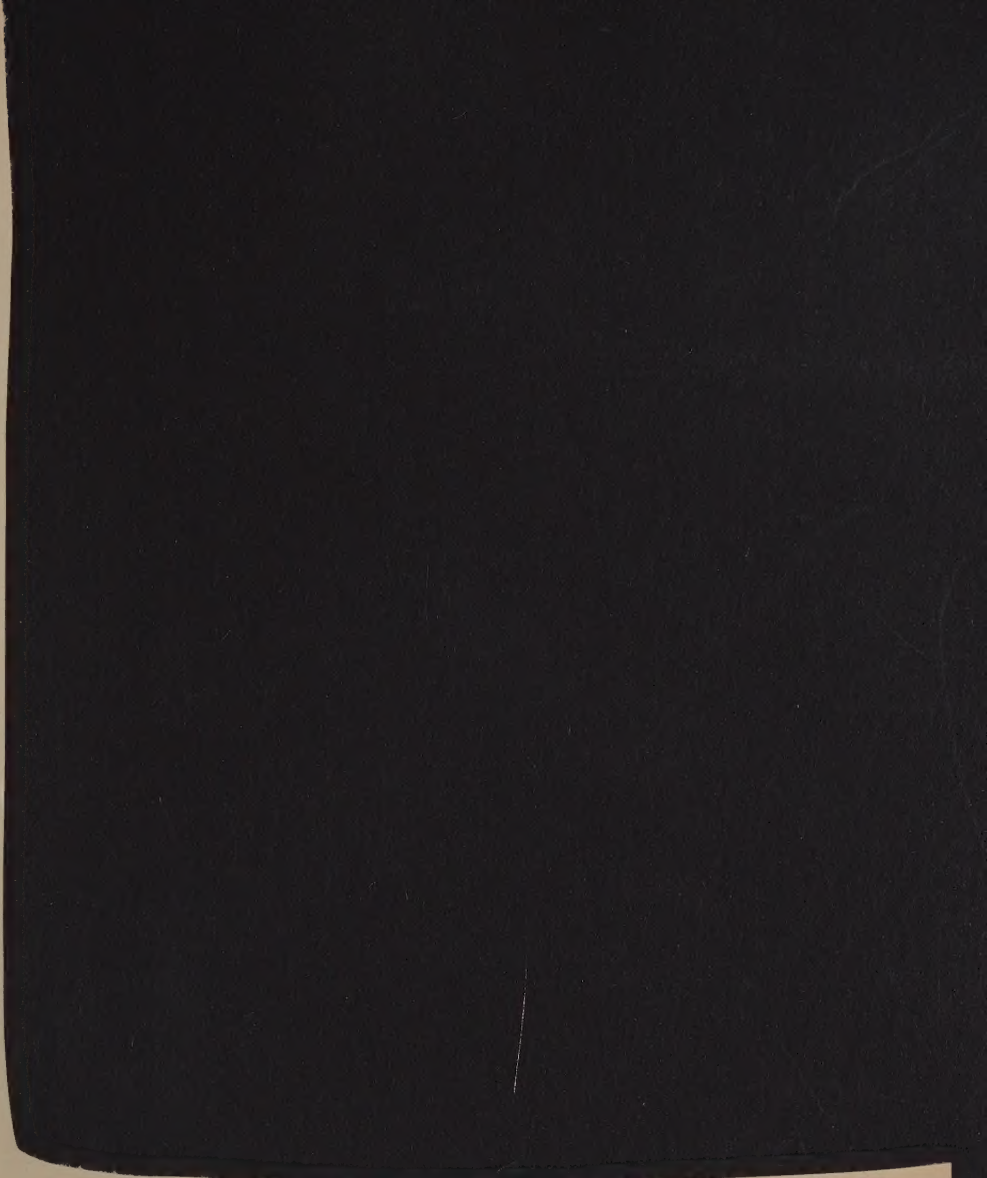
When it was built, the adoption of concrete as a finish exterior facing for even a modernized Gothic Church was a daring experiment, a startling departure from the tradition of stone exterior. But, like so many things, this choice was principally dictated by financial reasons and, in the end, the result more than justified the experiment.

In order to make the structure as monolithic as possible, all molding and most of the ornamental work were cast with the structure in either run wood molds or plaster waste molds. Window trim and what might be called applied ornament, was set in place and its back was used for forms for the reinforced concrete, thus solidly tying the work together. Only the free standing cast stone tracery mullions and muntins were set up separately; but they, too, were set around either steel or concrete members placed monolithically with the balance of the structure.

Concrete used for walls and other parts of the building is so-called Class A concrete, mixed in the ratio of 1 to 6, the aggregates being carefully selected and tested. Due to the thinness of the walls and the extremely heavy two-way wall reinforcement required by the height and width of the wall span, the coarse aggregate had to be carefully screened and graded so all particles passed a 1-inch screen. The mix, when placed, was fairly stiff and was hand tamped and thoroughly spaded in the forms, resulting in a uniformly good surface free from sand streaks and stone pockets.



Typically Gothic entrance detail is cast stone used as forms for monolithic concrete structural members.



Christian Church of Los Angeles is similar in construction to the Hollywood Church by same architects, Barber and Kingsbury.

Waste molds and wood forms were well lubricated with a special form oil before concrete was placed. It was found best practice to strip the forms about 10 days after the concrete was placed. Forms for the flat surfaces were made of 2 x 10 and 2 x 8 surfaced lumber. At first, 2 x 12 form boards were tried, but discarded when found unsatisfactory due to warpage. Patented form ties were used and the tie rods were removed from the concrete after it had hardened.

The roof construction is a concrete slab supported by steel trusses. Roof covering is variegated slate, laid at random on a 2½-in. bed of Nailcrete, which was shot onto the roof slab by means of a pressure air-gun. The roof trusses are cased in precast plaster work made to resemble wood. The design is that of the Westminster Abbey truss, which has been copied many times in this country. Of course, the design used in this structure was changed considerably from the original.

Interior wall finish is imitation caen-stone plaster on steel channel furring, permitting large insulating air spaces between outer and inner wall surfaces.

The concrete floors, resting on the ground, are supported on a 6-in. deep sand cushion. This was necessary because the adobe soil has a tendency to swell in moist weather.

Considerable attention was paid to the appearance of the concrete wall surfaces. It was desired to preserve the texture of the concrete as much as possible after applying a water-proof brush coat. The finish treatment, developed by the A. C. Horn Company, reveals the texture of the concrete surfaces and time is giving the structure a beautiful patina.

The second church in modernized Gothic is the McCarty Memorial Christian Church of Los Angeles, donated by the late Dr. Isaac A. McCarty.

This structure is entirely of reinforced concrete with the exception of the roof trusses. There is a basement under the auditorium, and the superstructure is carried on a series of reinforced concrete trusses. Otherwise, the building is constructed essentially the same as the Hollywood church—the style of architecture, however, is not quite so perpendicular but contains some elements of the flamboyant.

It is noteworthy that, despite the fact neither of these two churches were designed for earthquake stresses which was not required at the time, very close inspection by the Los Angeles Building Department failed to reveal the slightest weakening in structure or any other effects of the March, 1933, earthquake. Thus, was rather well established the resistance of well designed and correctly built reinforced concrete structures of considerable height to the effects of severe seismic disturbances.

It might be argued that neither of the structures follow archeologically established lines of materials for the styles which were adopted—and this is undeniably true. But, while the style itself is archeological and historical, the spirit of the design and the detail is modern. Had medieval builders recourse to our modern materials and construction methods, they would have doubtlessly used them in preference to the materials and methods they employed. It must be remembered that when it was developed, Gothic was modern and in building it, our architectural forebears used the most modern materials at hand. In preserving the form, we have the advantages of present day materials and practices.

tural Concrete

Cast Stone Institute

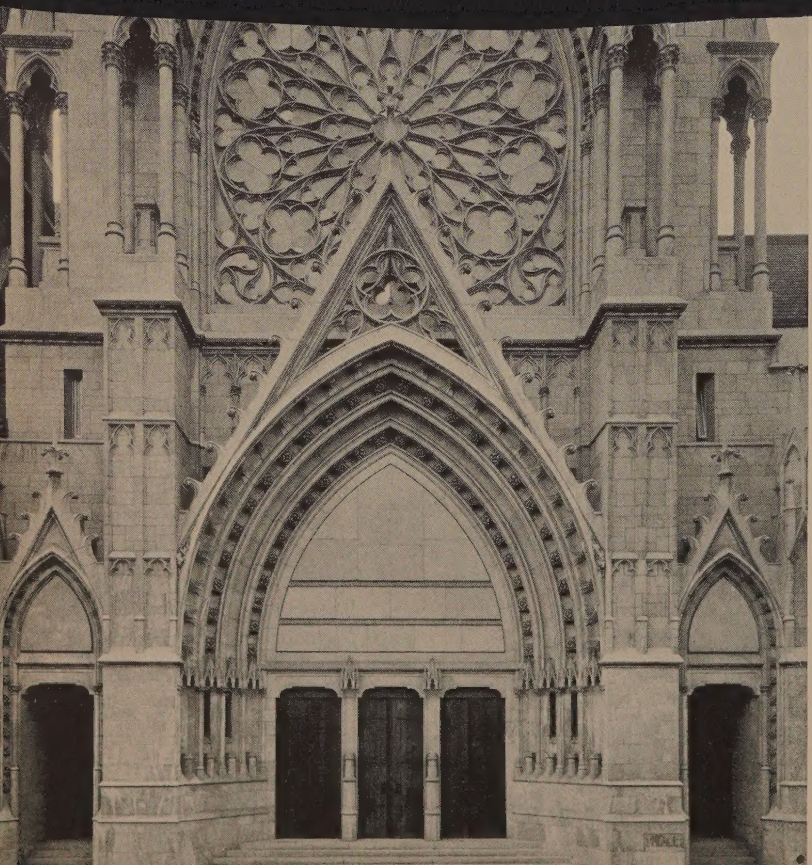
architect. But this sacrifice is not necessary, and
lly being realized that the most simple or most
rms may be molded in concrete and that decora-
ery forte of cast stone.

nolded material, cast stone lends itself naturally
tation. As a matter of fact, the idea of cast stone
igin, thirty to forty years ago, chiefly to the
a material in which the intricate tracery, rose
d other detail of Gothic architecture could be
vith much less labor and expense than were
carve them out of quarried stone.

be constantly borne in mind, however, that the
of cast stone's susceptibility to ornamentation
ined only by repetition of elements of design. If
nold is required for each unit, cast stone provides
or no economy over carved stones for decora-
eatment. Thus, the designer's understanding of
one technique is revealed by his skill in obtain-
naximum of ornamental effects with a minimum
ds, which means a minimum of expense.

oid strides in the development of colored aggre-
and mineral pigments have placed a wide range
ors in the hands of the designer employing cast
for decorative effects. By combining these colors
itly a new art has been evolved—decorative effects which have the living beauty of mosaics, the permanence of concrete and the economy of a mere structural material. Under rigid standards for color, texture and physical quality, the architect can specify and expect a faithful execution of his design.

Appropriate decoration has always been an inseparable part of architecture and it should be used wherever desired. Many are turning to monolithic concrete and cast stone for the freedom of design which is essential to fine art and complete expression of their ideas. There is an opportunity for exercise of ingenuity and imagination, wholly within reasonable and practical costs, through the use of cast stone as architectural concrete.



The entire exterior of Church of the Blessed Sacrament, New York City, is cast stone. The intricate detail and rose window of this entrance facade reveal the decorative possibilities of cast stone as architectural concrete. Gustav E. Steinbeck, architect.

The economy of repeated decorative elements in cast stone is illustrated by Unity Synagogue, New York City. Units forming the rich cornice and ornamental bands were made from comparatively few original carved models. Walter B. Schneider, architect.

Open Cast Stone Exhibition

AN EXHIBITION of cast stone will be held May 15, 16 and 17 in the U. S. Chamber of Commerce Building at Washington, D. C. Sponsored by the Cast Stone Institute, it will include samples, models and other exhibits from cast stone plants throughout the country.

In line with the increasing attention being given to concrete in architecture, the exhibits will illustrate and emphasize the conception and use of cast stone as a distinctive and refined form of concrete. Of especial interest will be a model wall section showing cast stone used as forms for monolithic concrete walls, the cast stone remaining in place as the exterior finish of the wall. Samples made with surface color-coated aggregates, manufactured ceramic and vitreous aggregates, and many other novel ideas, will demonstrate the progress being made in the development of concrete in this particular form.

Concurrent with the exhibition, a conference of producers and users of cast stone will be held by request of the Cast Stone Institute under the auspices of the Division of Trade Standards, U. S. Department of Commerce, for the purpose of adjusting and accepting the Proposed Commercial Standard for Colors and Finishes for Cast Stone, and for the purpose of selecting standard samples of additional colors and finishes.

ctural
RETE

· CONTRACTOR

h Construction?

rches have been designed during
r out a dozen lead pencils, some
hese pages are devoted to church
s and both of them are good: One,
t architectural concrete in more
second, a reminder that church
uilding activity that is bound to
ortance.

d under a bushel of cold figures.
30 the average yearly expenditure
uctures was $138,450,000. In the
Dec. 1934, the yearly average
ing a negligible item like $17,700,-
n be said is that a great potential
e of structure that will be built as

so that not all of this stagnation is
ances. Scores of church projects for
en raised were abandoned completely
when the nation's financial institutions tottered, but that chill is wearing off. Not much of that money was lost, and little has been diverted to other uses, because churches don't operate that way. It is known that money is ready for church construction, and in comparatively large quantities.

A more cheerful comparison, and one to honestly set hopes welling, is that $38,500,000 was in sight for new religious structures up to April, 1935, as compared to the total of $18,300,000 spent throughout 1934. While this increase may be only butter for the crust of bread in contrast with the yearly averages of the last decade, it is significant of a trend.

Rumors, too insistent to be entirely discredited, aver that several of the larger church denominations are about to engage in extensive building programs to take advantage of present economies in materials and construction costs. They have for examples the successful building of several churches during the depression period for which funds were used, as they became available, to erect parts of the ultimate structures at ridiculously low prices.

ALASKA PIONEERS move into their new home at beautiful Sitka, as told (Page 20) by GEORGE GOVE . . . More letters were found (Page 22) in our File 10-7-1.

Published by
PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue
Chicago

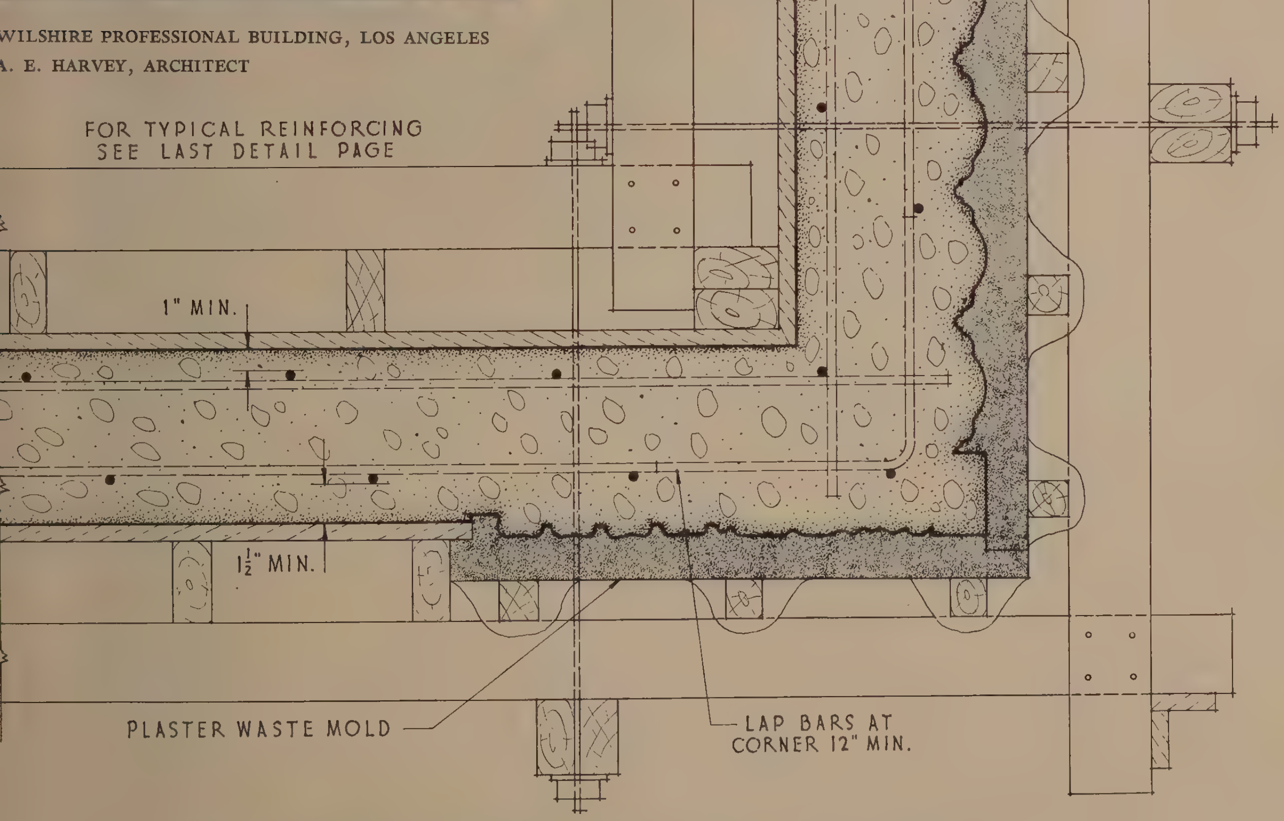
WILSHIRE PROFESSIONAL BUILDING, LOS ANGELES
A. E. HARVEY, ARCHITECT

REVEALS

REVEALS are important details in the architectural treatment of almost every building. Whether a reveal is perfectly plain or richly ornamented, careful attention should be given to design and construction because it is a part of the architectural treatment which forms a focal point of interest.

If the design of a building calls for a rather elaborate decorative treatment, plaster waste molds are economically used as forms. Repetition of ornament minimizes cost and it is not necessary to limit the detail to flutes or moldings that can be run in the plaster form with a template. Details such as floral designs, scrolls and other intricate ornament that would require individual carving in another material are produced readily by repeated use of the master positive plaster mold.

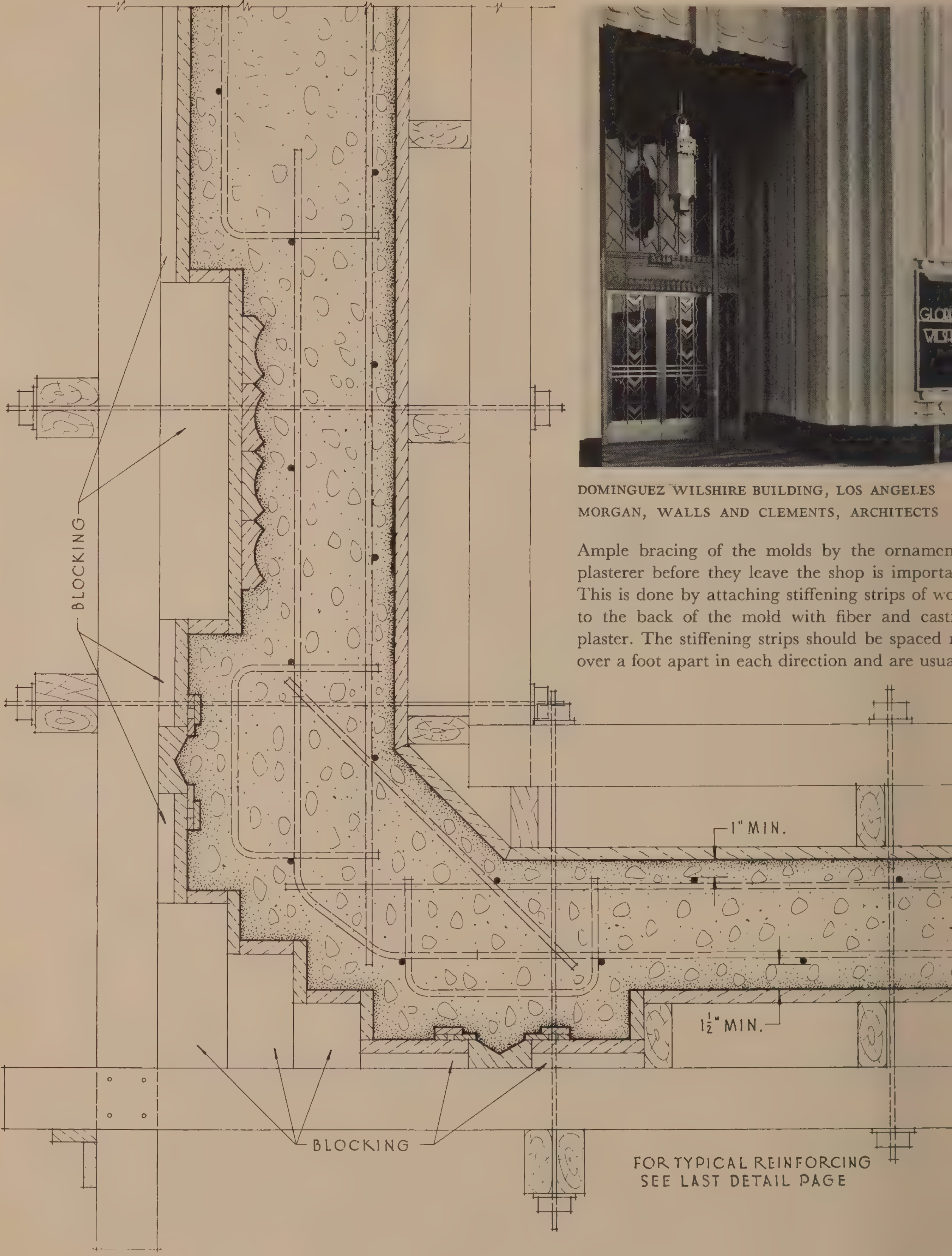
For a very deep, ornamented reveal for which a plaster model is used as a form, it is advisable to divide the mold at the corner. This facilitates handling and reduces the chance of breaking the mold.



REVEAL FORMED WITH PLASTER WASTE MOLD

DOMINGUEZ WILSHIRE BUILDING, LOS ANGELES
MORGAN, WALLS AND CLEMENTS, ARCHITECTS

Ample bracing of the molds by the ornamen
plasterer before they leave the shop is importa
This is done by attaching stiffening strips of wo
to the back of the mold with fiber and casti
plaster. The stiffening strips should be spaced
over a foot apart in each direction and are usua

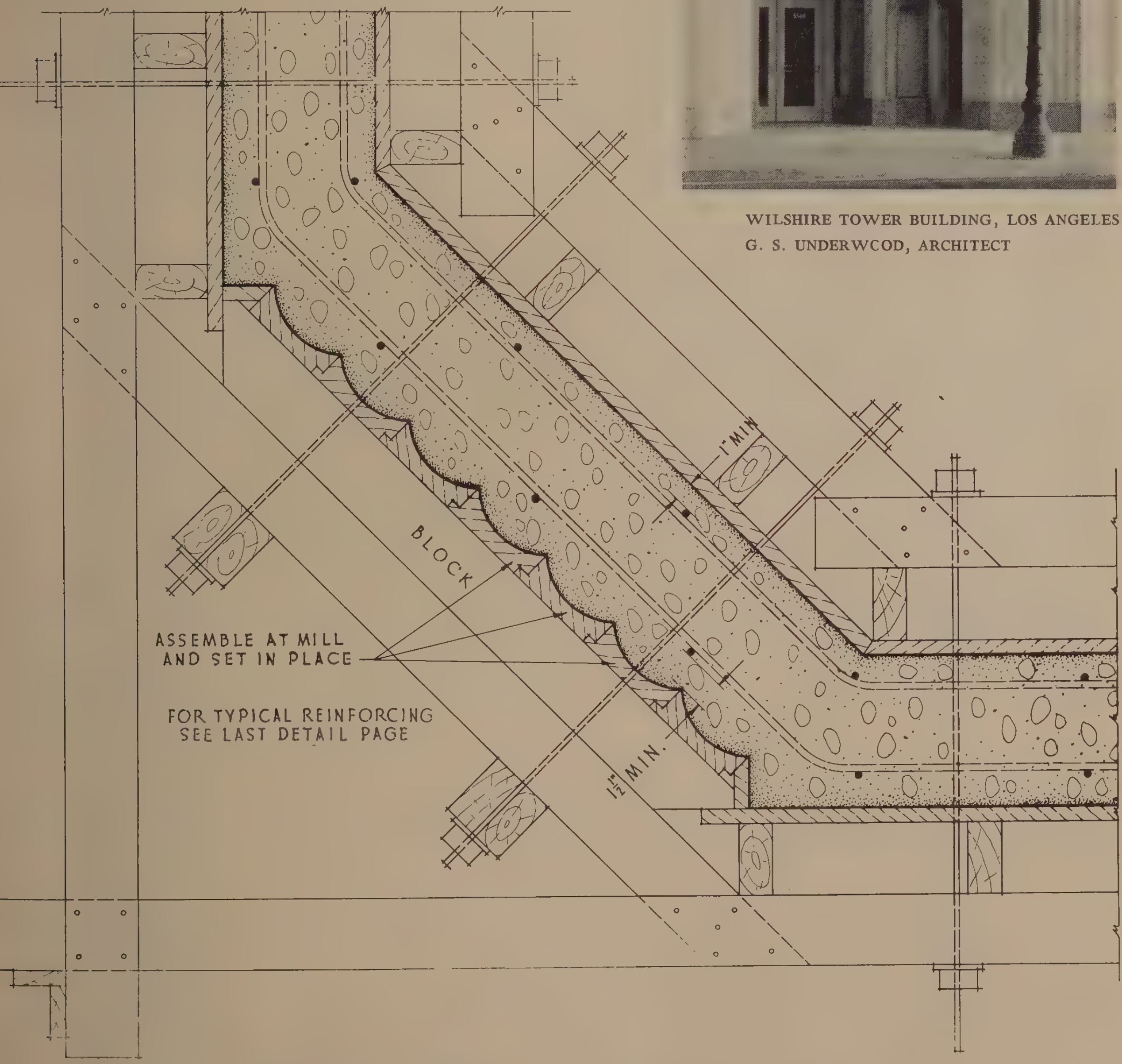


FOR TYPICAL REINFORCING
SEE LAST DETAIL PAGE

OFFSET REVEAL FORMED WITH DRESSED AND MILLED LUMBER ade of 2 x 2 material. The strips serve to block the mold against the alers and should therefore be made to work to the line of walers that race the adjacent forms. Small flat molds can sometimes be made ithout bracing and can be placed in the forms against the sheathing hich has been set back to receive the mold. The concrete contractor nd the ornamental plasterer should cooperate in laying out the forms r a job before any plaster molds are made.

It should be specified that plaster molds be rabbetted to receive the butting form sheathing and also to receive abutting sections of molds form corners. After the molds are assembled in the forms the corner hould be plastered over on the back with fiber and casting plaster to old the corner rigid. This practice should be followed for all joints etween sections of waste molds and the face side of the joints should e carefully pointed after the plaster on the back of the joints has ardened. It is desirable to have all pointing and patching done by the rnamental plasterer.

WILSHIRE TOWER BUILDING, LOS ANGELES
G. S. UNDERWCOD, ARCHITECT


1" MIN
BLOCK
ASSEMBLE AT MILL AND SET IN PLACE
FOR TYPICAL REINFORCING SEE LAST DETAIL PAGE
1½" MIN.

FLUTED REVEAL FORMED WITH MILLED LUMBER

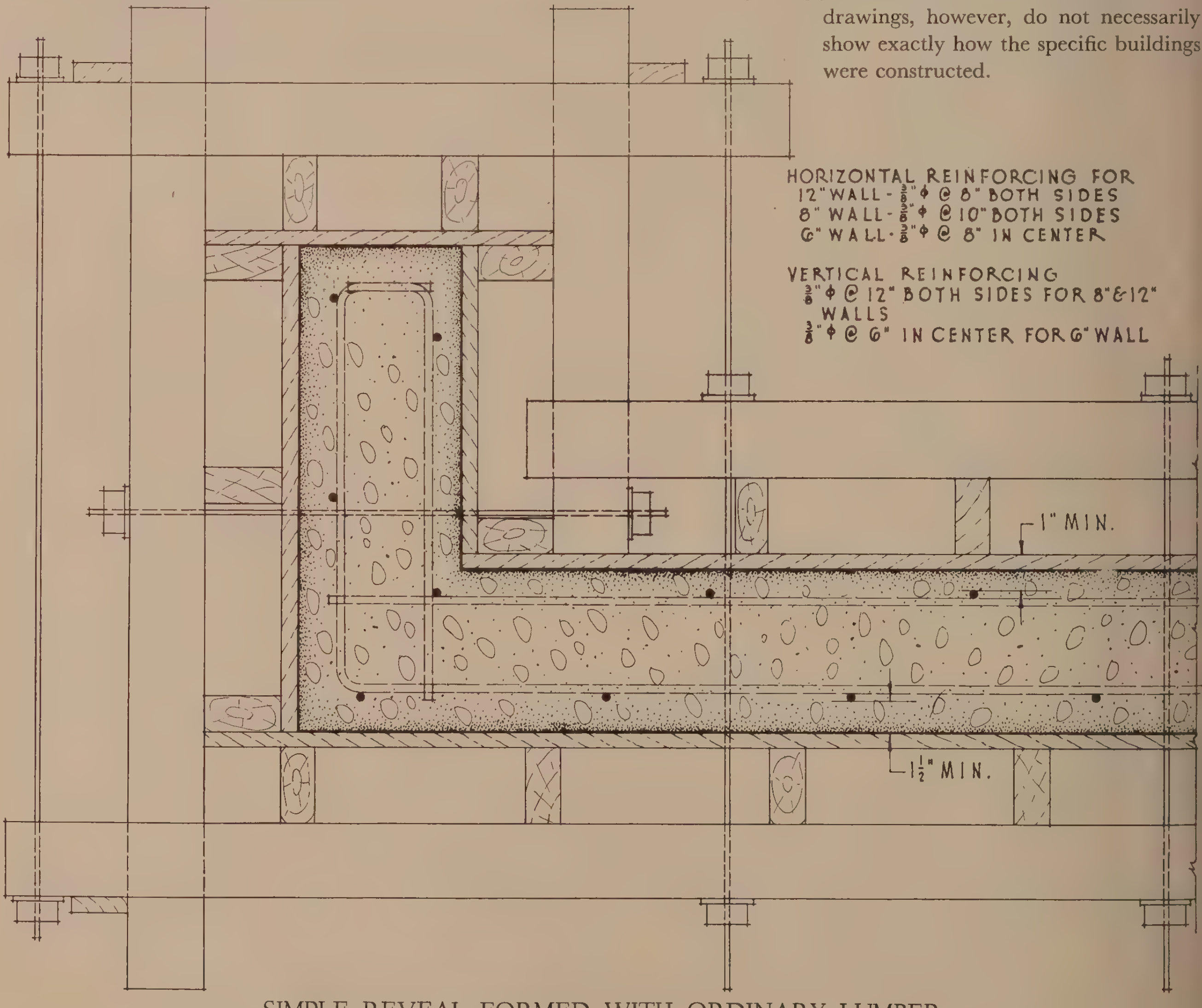
CITY NATIONAL BANK, HUNTINGTON PARK, CALIF.
HARBIN HUNTER, ARCHITECT

The component members of a reveal formed with lumber should preferably be made of stock sizes. If possible, pieces that must be shaped in the mill should be made from stock sizes also. To do so cuts waste, simplifies construction, saves time and reduces cost. As a rule, no sacrifice need be made in the architectural treatment by using stock sizes of lumber.

The beauty of a well made reveal is in sharp, straight corners and in bold shadows. In order to obtain good true edges there must be no spreading of the forms at the return. To hold corners securely, tie rods must be placed just as close to the corner as possible. The walers should also be well blocked and secured together at the intersections on the outside of the corner to prevent any chance of movement. This is important whether plaster or wood forms are used. It is best to place tie rods so the holes left when the rods are withdrawn are in an accessible surface of the ornament to obtain a good job of plugging.

Wherever there is an abrupt change in direction of a wall, as at a deep doorway reveal, there may be a concentration of stress due to temperature and shrinkage or to earthquake shocks. It is therefore very important that such places be well reinforced.

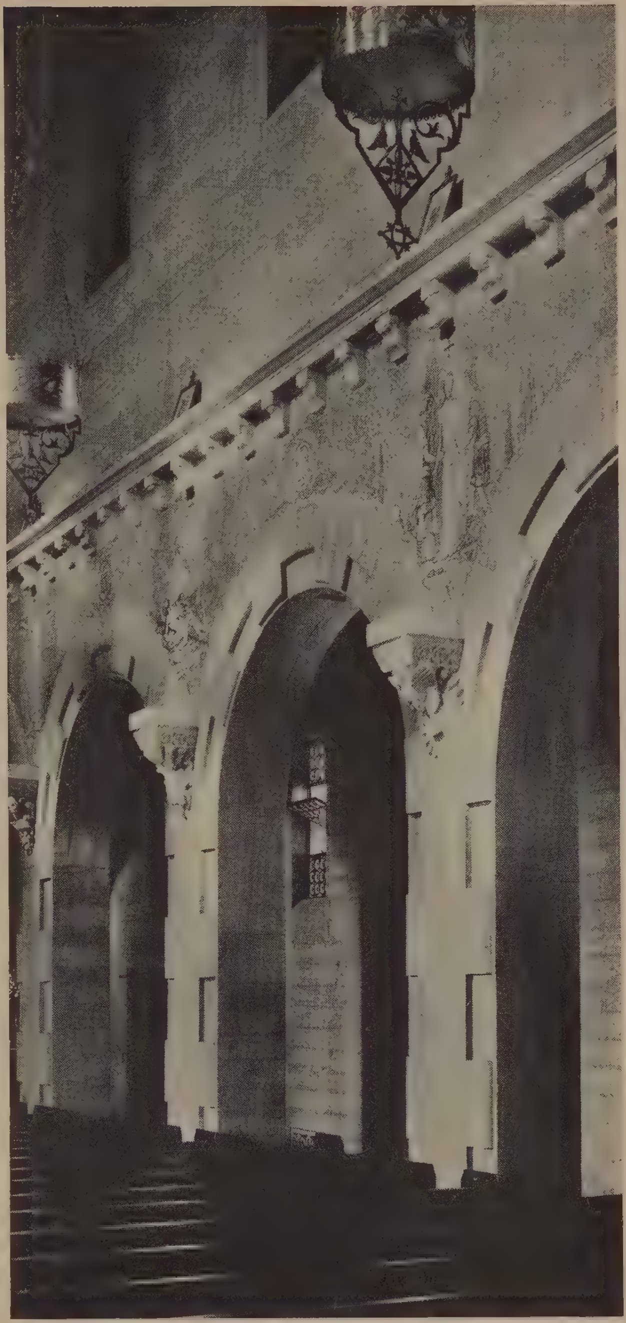
The buildings in the illustrations show reveals similar to those detailed. The drawings, however, do not necessarily show exactly how the specific buildings were constructed.


HORIZONTAL REINFORCING FOR
12" WALL - 3/8" ϕ @ 8" BOTH SIDES
8" WALL - 3/8" ϕ @ 10" BOTH SIDES
6" WALL - 3/8" ϕ @ 8" IN CENTER
VERTICAL REINFORCING
3/8" ϕ @ 12" BOTH SIDES FOR 8" & 12" WALLS
3/8" ϕ @ 6" IN CENTER FOR 6" WALL
1" MIN.
1½" MIN.

SIMPLE REVEAL FORMED WITH ORDINARY LUMBER

Published by
Portland Cement Association • 33 West Grand Avenue • Chicago

Nave wall of Church of the Precious Blood, Los Angeles. Flat surfaces were placed against wide rough form boards and all detail, excepting mosaics, was cast in plaster waste molds. Newton and Murray, architects. C. J. Derrick, structural engineer. Wurster Construction Co., contractor.



The Beauty of Monolithic Concrete Construction

By ROBERT D. MURRAY, A.I.A.

OUT of the experience of mankind's countless generations, the rock has come to be the symbol of that which endures and lasts and passes not away."

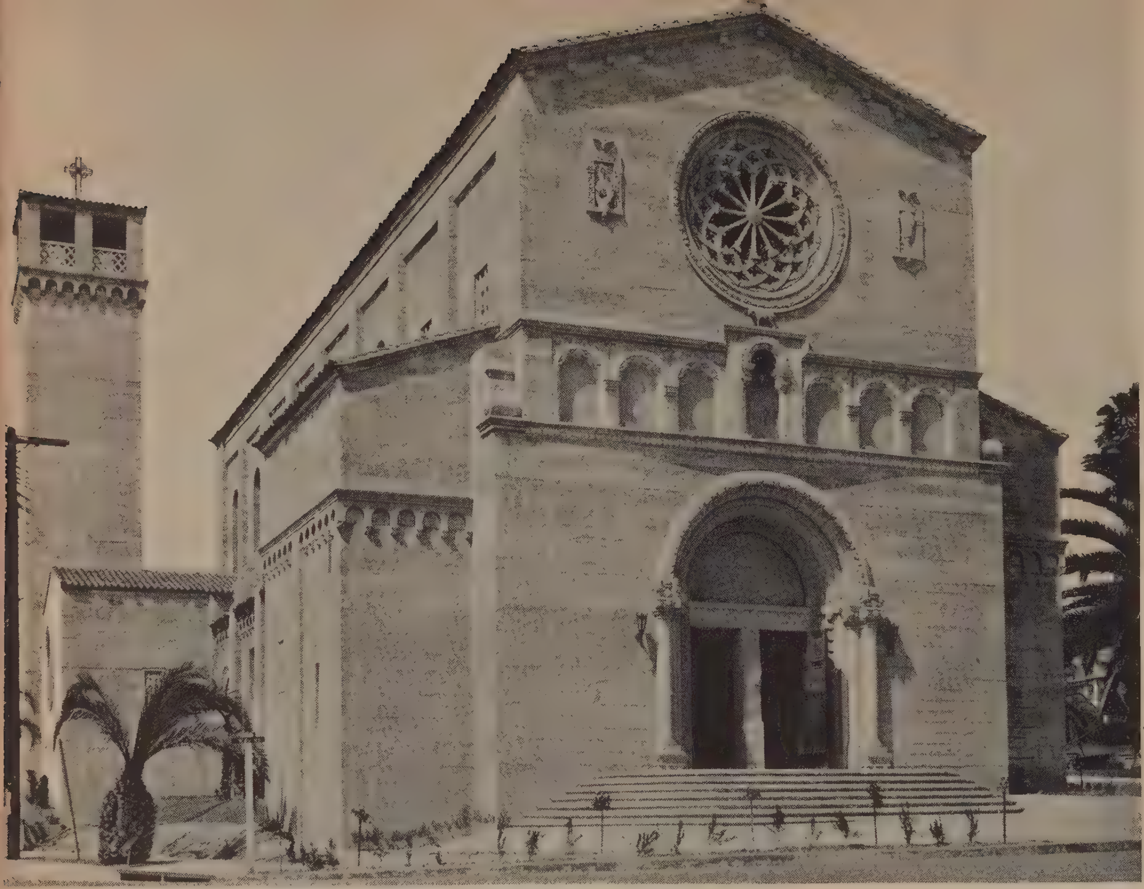
Too often, however, we see stone buildings where the improper use of this material as well as poor scale and proportions of stone units, improper jointing, uninteresting color or poor color arrangement have ruined the desired effect. Exposed concrete surfaces can be ruined in much the same way. To achieve beauty with concrete, as with any other material, requires studied design and skilful craftsmanship.

There are several reasons why we have used concrete in our buildings: First; stone is not a local building material. It is costly and difficult to get in Southern California. Cement is manufactured in great quantities here and good sand and small rock for concrete aggregates are plentiful. Second; stone is not a good material for construction in an earthquake country. Reinforced concrete is an excellent 'quake resisting material. Third; in our church work, particularly, we have felt concrete could best be adapted to our design.

Southern California has a climate similar to that of Southern Europe. Steep roofs are not needed; large window areas for dark days are not necessary. In other words, Gothic architecture is not a logical style for churches in this locality. Classical or Romanesque architecture better suits our needs.

In our concrete work little attempt has been made to imitate stone. Instead, we have wished to express monolithic design. Ornament has been made integral with the wall surface since stone inserts might be shaken loose in an earthquake. Moreover, unity of structure is symbolic of the unity of the church and exposed concrete gives the effect of strength—an impression of solidarity and endurance. There is great beauty and interest in the textured surfaces. It is the material of yesterday, today and tomorrow.

When we started using exposed concrete in combination with waste molds and piece molds, most walls had been cast against 6-in. form boards. To obtain good scale and greater interest on exposed wall areas, we used 10-in. boards, taking particular care to soak the forms in order to raise the grain of the wood for pronounced texture. This was done in the Church of the Precious Blood in Los Angeles. The use



To obtain good scale and greater interest on the exposed wall areas, 10-in. form boards were soaked in water to raise the grain of the wood for pronounced texture. Front elevation of Church of the Precious Blood.

of wide form boards increased the cost slightly due to additional bracing, but the wall surfaces were infinitely more interesting. There is a tendency for the wider form boards to cup slightly; but this very cupping improved the texture.

In our work, slash-grain Douglas Fir is generally used for form boarding and Redwood for wood molds. Where Redwood is used we recommend a thorough shellacking of the contact surfaces to prevent staining the concrete. Plaster waste molds are less expensive if made by a competent ornamental plasterer—except for very simple moldings—providing the general contractor is familiar with their use.

To prevent the smoothness of plaster or finished wood waste mold surfaces from being out of character with the rough or textured flat surfaces, the molds can be tooled or textured. This should not imitate too exactly the graining of the wood. The ornamental portions of the concrete itself may be textured with pneumatic tools to obtain beautiful effects. This work must be done skilfully to give it character. The cost is not great, but care must be taken to have competent craftsmen perform the work, otherwise a hen-scratched effect may be the result.

A fine example of good concrete tooling was obtained in a baldachino or ciborium canopy for the Church of Saints Peter and Paul in Wilmington, California. The height of the baldachino is about 35 ft. It was cast as a monolith to make it earthquake resistent and to simplify its construction.

This view of the choir of the Church of St. Peter and St. Paul, Wilmington, Calif., further reveals the vigorous technique employed by architects Newton and Murray in their use of monolithic concrete.

The concrete in the baldachino was made with fine, white aggregate and when tooled, gave much the effect of mat finished marble.

Our experience has led us to believe that shellac should not be used on plaster waste molds. Cup grease with kerosene is easy to apply and is particularly effective. A ⅛-in. splash coat of colored plaster against the model, when making plaster waste molds, will warn workmen not to cut into concrete surfaces when molds must be chipped or chiseled away. When one sees the primitive or rather unintelligent methods of stripping waste and piece molds that certain contractors use who are uninitiated in the ways that cost less and accomplish more, it is appalling, or I might say shocking. There is no necessity for such methods.

Piece molds, which are simply waste molds made in small sections, are recommended in preference to large molds, especially where undercuts occur. Even Corinthian capitals with delicate undercuts can be formed by using well made piece molds. The molds should be so constructed that they can be made to face a certain setting line or break in the profile of a molding and should be built to one plane. Match marks are provided on the molds so the pieces can be fitted together in the proper places. A setting drawing should be made as in stone setting.

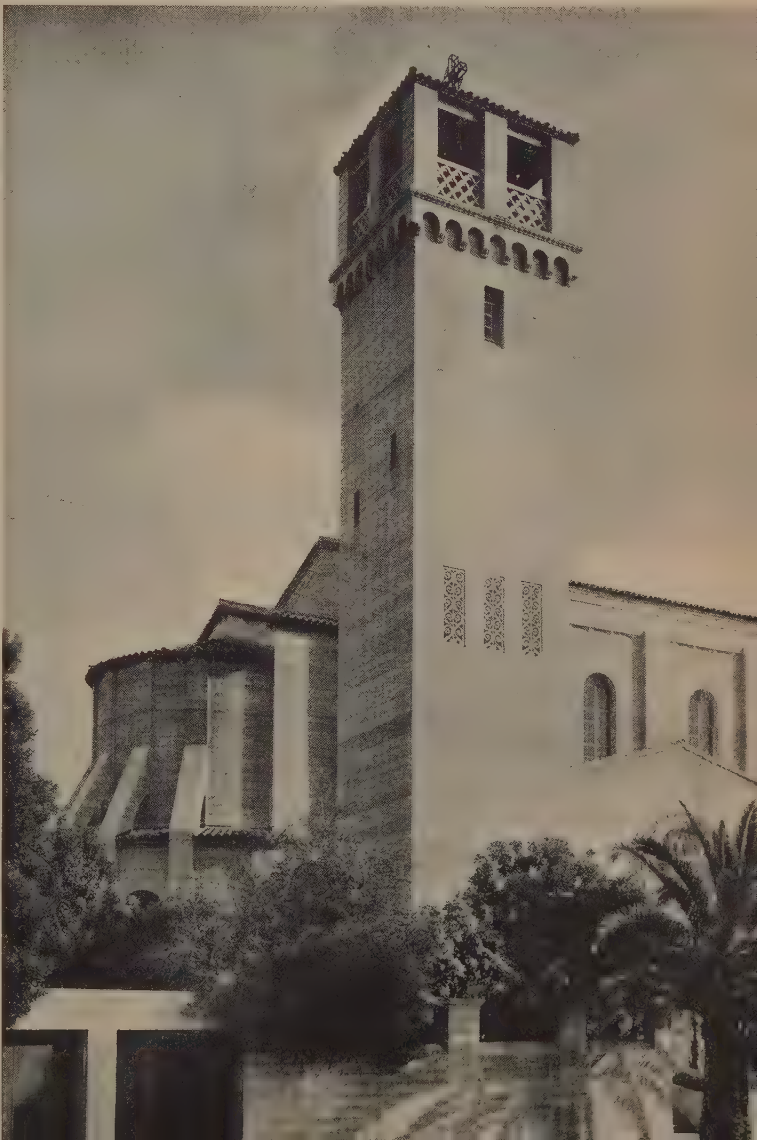
It is advisable to wait until the end of the job to strip the molds so that ornamental surfaces will not be damaged. Proper bracing behind waste molds is essential. Of utmost importance, also, is the storing of molds in the shop and on the job to prevent them from springing out of shape. The stacking of molds should be under the personal supervision of the ornamental plasterer.

If possible, a model maker should work with or aid the carpenters erecting forms so that provision can be made for removal of certain boards while concreting. Through the opening, concrete can be placed directly against the mold instead of dropping it from a height which might cause damage. The concrete can be puddled more effectively through the opening thereby securing a smooth surface.

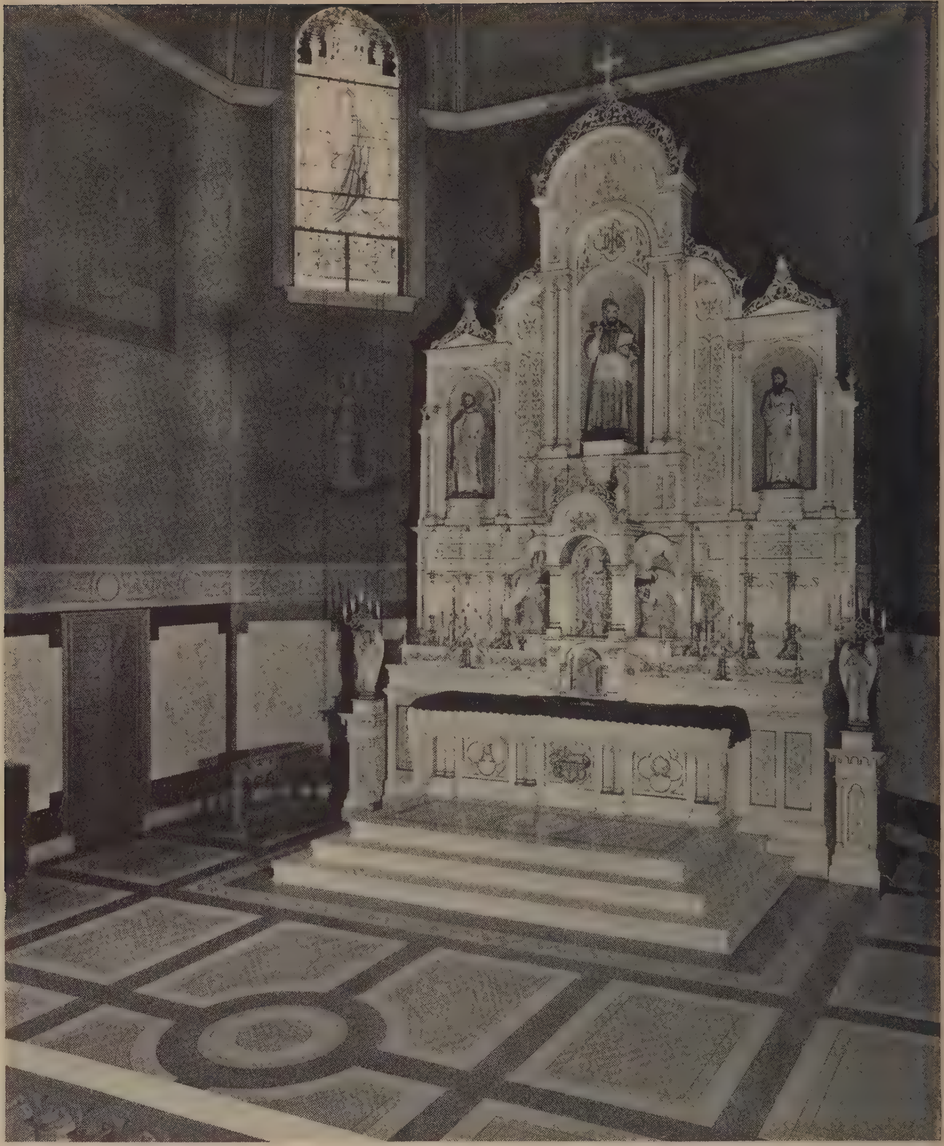
Properly built wood forms are a prerequisite of good architectural concrete work. The direction of the form boards must be carefully considered. In the forms for arches, shaping or cutting short boards to radiate from the center is necessary to obtain required texture or direction of the textured surfaces. Unless concrete surface work is cleverly detailed and skilfully handled, it can be as flat and uninteresting as yesterday's stein of beer.

Although false construction is not recommended, where it can be so well done as to escape detection from even the trained eye, it is permissible. A plaster ceiling may be run on metal lath and channels to imitate concrete providing the grain marks are made by means of thin boards which are pressed against and then pulled immediately from the plaster surface. We have tried rollers with imprinted graining but with little success. The color of the plaster must match the concrete. A molding at the ceiling line to cover the joint between plaster and concrete is desirable.

It is the plasticity, the original utter formlessness of concrete that makes it so willing a material for the accomplishment of architectural purposes. It requires a bit of space and elbow room for placement, but beyond this minimum limitation it is free to assume whatever shape or form the designer chooses to give it. For effects of mass and strength it is incomparably well suited. Undoubtedly there are those to whom concrete, for architectural use, has a strange and alien look. True, it is comparatively new and in its mere beginning, and concrete is not yet familiar to all architects and all craftsmen, but it has life and novelty and presents the joy of fresh adventure. If some be cold to it, let Wordsworth's primrose be remembered: "A primrose at the river's brim, a yellow primrose was to him—and nothing more."



The direction of the form boards must be carefully considered to obtain the interesting texture revealed by the concrete surfaces of the towel and aspe of Church of the Precious Blood.



Altar and sanctuary of St. Francis De Sales Church, Paducah, Kentucky, after alterations. The floor and steps leading to the altar are of terrazzo which in design and color scheme blend with the architecture of the interior. Thomas J. Nolan, architect for the modernization; Keno Rosa Company, contractors—both of Louisville.

Terrazzo in Church Decoration

By THOMAS J. NOLAN, A.I.A.

THE custom of concealing floors under carpets, mats and other coverings has long obscured the fact that floors can be, and often should be, an important part of architectural design. This is particularly true of churches wherein large floor areas serve definite ritual functions and are thereby subject to constant use and close observation.

In remodeling the St. Francis De Sales Church at Paducah, Kentucky, the construction of new floors to give them beauty in harmony with the interior of the structure, was a major part of the alteration project. Built originally in 1904, this church was of wood joist construction with wood floors throughout—all carpeted. Wear, both to floors and carpeting, was naturally a consideration when terrazzo was suggested for the new floors; but an important reason for the selection of this material was that the designs and colors obtainable with it would blend more perfectly with the design of the church and new wall decorations.

The greatest possibilities for decorative effects are offered by terrazzo floors. Made of portland cement and crushed marble or other colored stone aggregate, to which may be

Steps leading from the sanctuary rail are terrazzo made with imported Verdolite marble aggregate.

added pigments, the range of color values is practically limitless. By means of metal strips an endless variety of patterns are produced—from the simplest block arrangement to those intricate designs that are veritable enlargements of cloisonne enamels.

When alterations commenced in 1934 with addition of an entrance vestibule and confessionals, all old wood floors under the pews and aisles were torn up, cut down between the joists, and replaced with terrazzo in three colors.

Early this year, the steps leading to the sanctuary and all of the old floors in the sanctuary and sacristies were removed and reinforced concrete slabs and foundations installed. Sanctuary, sacristies and steps were then covered with terrazzo, thereby making all floors permanent, more fire resistant and free from marring.

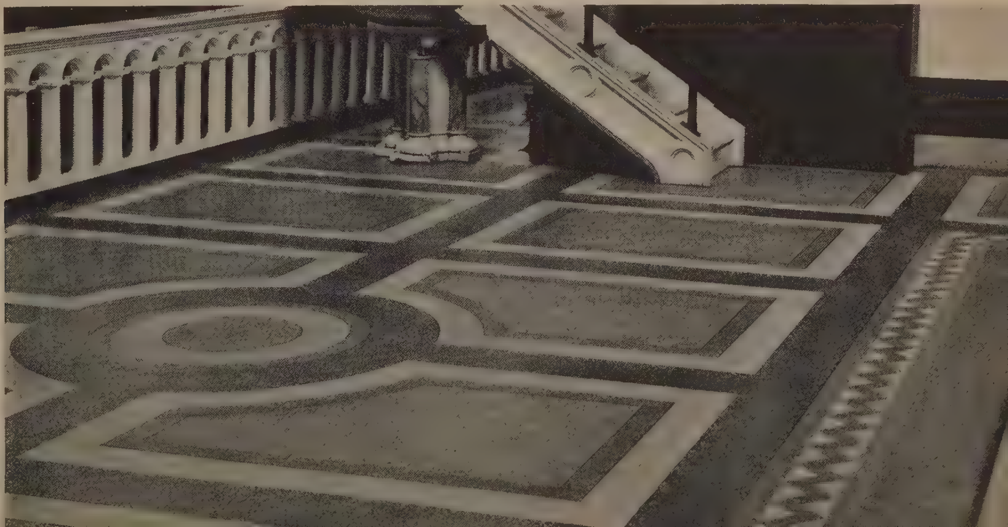
Decorative motifs are varied, but all are as nearly as possible in harmony with the architecture of the church with allowances for future decoration. The terrazzo in the aisles and the large vestibule was made to give a two-tone effect of alternating colors in blocks about 12-in. square. The terrazzo was made of white portland cement and marble chip aggregates—60 per cent Red Verona, 40 per cent yellow Verona and a small amount of red coloring for one tone, and 60 per cent yellow Verona, 40 per cent red Verona and buff coloring for the contrasting tone. Wherever possible a 3-in. Botticino strip is inserted in the aisle panels.

For the steps leading down from the sanctuary, imported Verdolite marble was used for aggregate with a little green coloring added to the mixture. This same color is used in the borders throughout the sanctuary. Smaller borders of Botticino and yellow Verona surrounding coral Verona panels make up the complete design. Division strips throughout the sanctuary floor pattern are ⅛-in. heavy top brass.

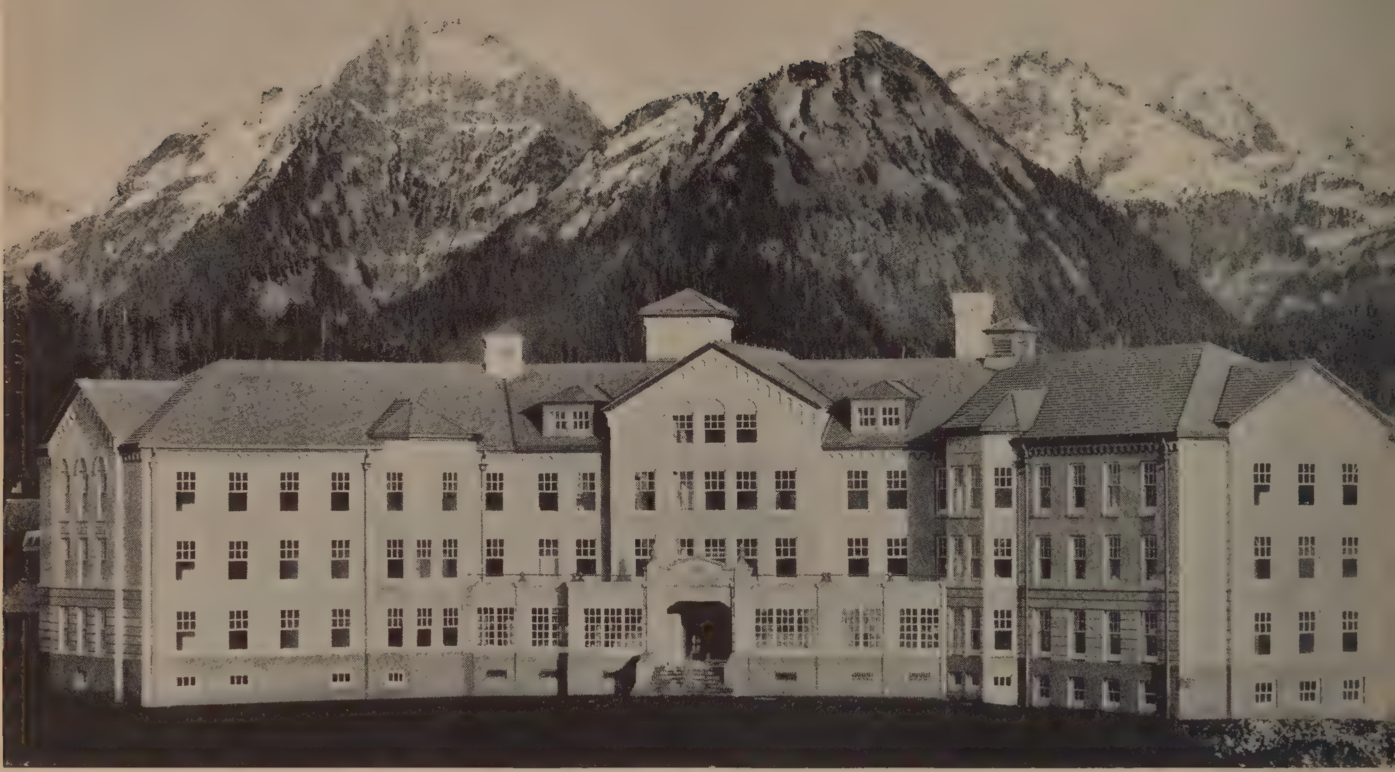
The design was patterned after the floors laid in basilica type churches in which parts of old ruined edifices were used in the construction of new buildings—such as columns and pillars sliced and placed in the floor in whatever manner they happened to harmonize. No less charming than those ancient models, this modern terrazzo floor will give enduring service. It may be expected to become more mellow and more beautiful with passing years as a rich patina is developed on the surface.

Construction of a satisfactory floor finish requires careful workmanship and an adequate specification. The work should be done by a floor specialist.

Standard specifications of the National Terrazzo and Mosaic Association, available to anyone desiring to use terrazzo, were used throughout for installation over wood floors and concrete slabs. Color selections were made from color plates prepared by the Terrazzo Association. All floors were installed by the Keno Rosa Company of Louisville.



Another view of sanctuary floor. Red, yellow, buff and coral form the contrasting colors in this terrazzo floor. The old floor throughout the church has been replaced with terrazzo.



New monolithic concrete home for aged Alaska Pioneers, recently built at Sitka, Alaska, has an ocean at its front door and never-melting snow peaks behind it. Heath, Gove and Bell, of Tacoma, were the architects, and J. B. Warrack Company, Seattle, the contractor.

Alaska Pioneers' Home

BY GEORGE GOVE, A.I.A.

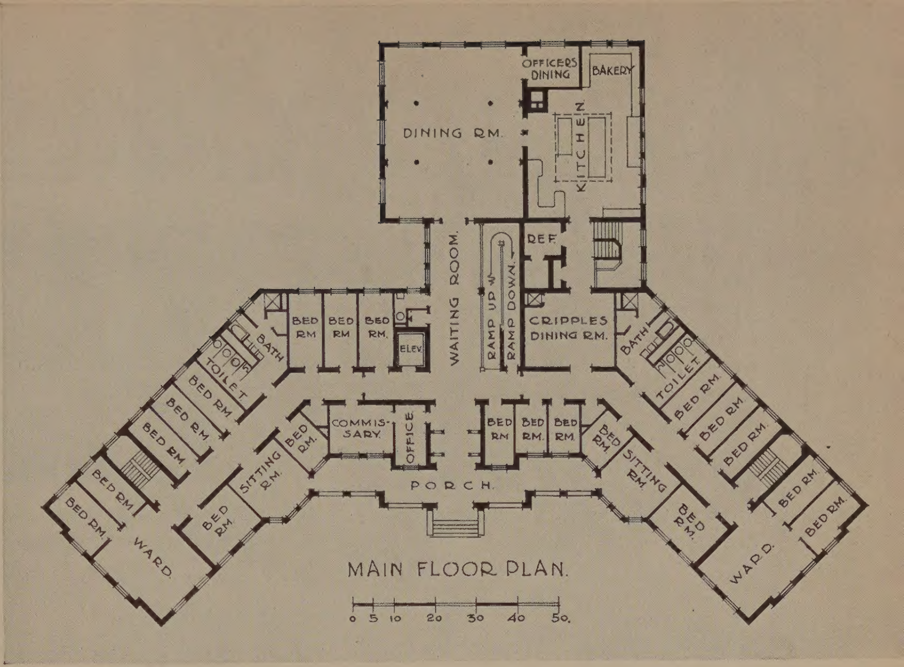
TWENTY-FIVE years ago the Territory of Alaska instituted a pension system for its pioneers. In thus frankly facing the problem of old age among its citizens and in acting to make provision for it, Alaska was itself pioneering; for at that time none of the States had adopted programs of this character and in the western hemisphere such undertakings were wholly new and untried.

About ten years ago the Territorial Legislature began to set aside a definite sum of money each year for the purpose of building a Home. It is with moneys so accumulated that during 1934 the building shown in the accompanying illustrations was erected at Sitka, former capital of the Territory, not only under the existing American ownership but under the preceding Russian control. Prior to the completion of the Home, the aged pioneers now in residence were accommodated in the old, disused army barracks at Sitka.

It is a commentary upon the hardihood and independenc of the old Alaskan that many will not come to the Institution until so aged and crippled that they are unable to liv alone any longer. This fact made the design of the Hom that of a hospital to a considerable extent. The entire thir story has been fitted up for the bedridden.

Special quiet rooms are provided for those near the en of their journey, and the arrangement of rooms on the firs and second stories is varied so as to provide for differen accommodations according to the wishes or whims of th guests. Some want to be alone, some two in a room an some enjoy sleeping in wards similar to the camps which i the Territory have been called "home." Special provisio is made on the first floor for the cripples. They are give their own dining room. Two sitting rooms are provided o each floor with access to the glassed-in porches. A larg central space is provided just outside of the main dining room for those waiting for meals. There are places for the storage of the inmates' few remaining and treasured possessions. Little accommodation is made for visitors, as the loneliness of these pioneers' lives has prevented much social development.

The lawn slopes gently toward the marvelously beautiful bay of Sitka, jeweled with its hundreds of islands, Mount Edgcomb in front, the everlasting snow covered peaks behind it, and the setting sun illuminating the incomparable landscape with constantly changing colors. The space immediately in front of the building will be enclosed by a hedge and other landscape work so as to permit privacy, although tourists and visitors will be welcome at the Institution.



The main floor plan is illustrated. The building is of reinforced concrete. Corridor and certain other interior walls shown in heavy black, as well as all exterior walls, are of reinforced concrete. Earthquakes have been experienced at various places along the Alaska coast and on Baranoff Island on which Sitka is located. A thoroughly braced and rigid building was therefore desired. It is built upon solid rock.

Some apprehension was felt in undertaking so large a building in so remote a place and without a well developed gravel supply; but under the able organization of the contractor, J. B. Warrack Company, and the careful inspection of the superintendent of construction, C. W. Hufeisen, both of Seattle, and in spite of the longshoreman's strike on the Pacific Coast, the building was erected in 50 days less than the contract time.

The concrete work is of exceptionally good quality. Due to the irregular shape of the building, consideration was originally given to dividing it into several parts by expansion joints; but on weighing the pros and cons of the matter it was finally decided to maintain the unity of the structure. Additional reinforcement was accordingly provided with generous anchorage at the junctions of the wings with the rest of the building, and good bracing in the wings themselves was provided in their narrow direction. Nothing has developed to make us question the wisdom of this decision, while on the contrary, the troubles that have been avoided by eliminating the joints are numerous.

The problem which this building presented—a somewhat complex one—was approached sympathetically by the Superintendent, Medical Officer, Commission and the architects all of whom were united in the common desire to make the last days of the frontier veterans who have developed Alaska as pleasant and happy as possible. About 140 of them are now in residence, and it is good to see how they enjoy their comfort.

Alaska does not contemplate a home for aged women as they think it is better to pension the few such dependents they have upon their relatives or keep them in their own homes. But as most of the men have already reached the hospital stage, an institution with such facilities as the Sitka home affords seems to be the ideal way of caring for them.

The Pioneer's Home is located near the center of this strip of land jutting out into beautiful Sitka Bay. Who could imagine a more delightful place to spend the tired, waning years of life?

File 10-7-1 Being Letters, Notes and Advices About ARCHITECTURAL CONCRETE

UNTIL the boss gives us another page to spread out on, File 10-7-1 can publish only a few of the letters which came in answer to our invitation to use this page for what it can be worth. However, the bulk of correspondence comprised requests for sets of detail sheets for office use which we were glad to fill, and questions about problems which could be answered better through the mails. So nothing good has been lost and the invitation is still open.

• •

Wide interest in the renderings shown here last issue prompts us to reproduce more of the new projects coming up. There are scores of architectural concrete jobs on the boards all over the country now, and there must be many more we don't know about. We shall try to show many of them on this page in future issues.

• •

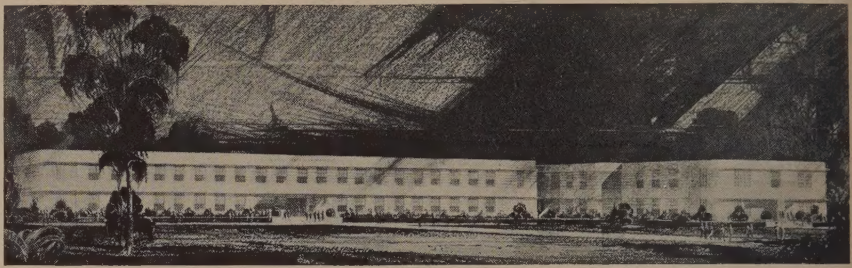
Third is Best?

The third issue of your Architectural Concrete is most attractive of those so far published. Most interesting to us was Mr. Kamphoefner's article on the Sioux City Pavilion. I think this monumental structure is a great step forward in the utilization of concrete as a medium of strong architectural expression.

I am enclosing a small photo of a model (*see cut*) of a concrete grandstand for a German water sports arena which should interest readers of Architectural Concrete.

J. E. Kalinka,
Chief Structural Engineer,
Roberts and Schaefer Company
Chicago, Illinois

Many thanks to Mr. Kalinka for the fine model picture.



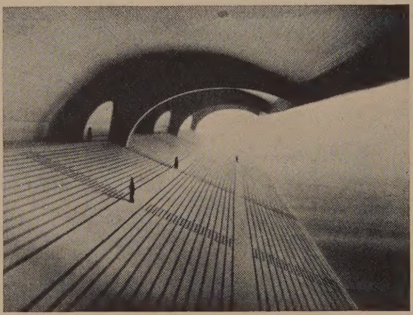
Early construction of a new Manual Arts High School in Los Angeles is contemplated. This approved design, by Parkinson and Parkinson, architects, and J. G. Middleton, structural engineer, calls for all reinforced concrete construction.

Good Architecture

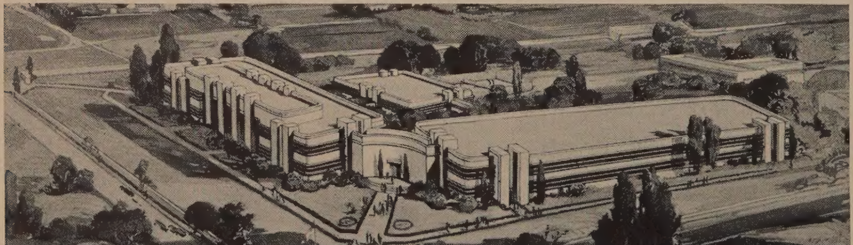
I am grateful for the copies of Architectural Concrete which you have sent me. You should be congratulated for your excellent promotion of good architecture in concrete construction. There is no room to question the effectiveness of your program for improvement in the technique of concrete making and in the art of construction, and your recent efforts to promote good architectural expression in concrete will doubtless bear fruit.

Arthur G. Hayden,
Designing Engineer,
Westchester County Park Commission
White Plains, N. Y.

• •



Model for a reinforced concrete grandstand in Germany. The thin slab shell extends 90 ft. over balcony seats. Cantilevered frames are spaced about 90 ft. apart. The design is by Dywidag.



Project for Jefferson High School, Los Angeles, Calif. This low-lying, many-windowed, completely modern concrete structure was designed by Morgan, Walls and Clements, Los Angeles architects.

Collegiana

I am writing this in appreciation of the folders you have been sending out under the title, "Concrete Information," and of your magazine, Architectural Concrete. Both are invaluable to a practicing architect and a teacher in showing methods of forming and casting monolithic concrete—methods which seldom come to the attention of student or architect. I hope this series will be continued indefinitely, as I find it to be a valuable file for reference.

Frank Mills Lescher,
Asst. Professor of Architecture,
University of Illinois
Urbana, Illinois

• •

I have heard a great deal about your booklets on architectural concrete. Would you send me back numbers of your new magazine? I am a student of the Catholic University, Architectural Department.

Joseph Moore
Washington, D. C.

Student Moore's request was matched by others from Columbia, Princeton, Pittsburgh and the senior class at Illinois.

• •

News Letters

Bids have been taken for construction of three additional units for the Bronx Terminal Market, New York City. These new units will add 28 stores to the 48 included in the original group of structures started last fall. All are reinforced concrete throughout from footings to roofs. Other buildings for the same group are being planned when and if funds are available. Pennington, Lewis and Mills are architects on the project.

• •

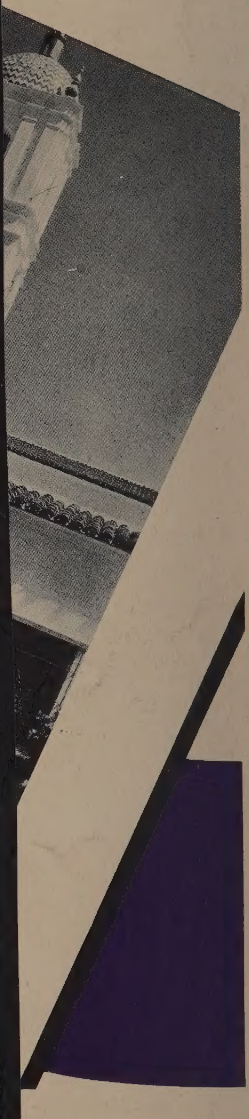
The Ford Music Shell at the San Diego Exposition will be entirely of reinforced concrete.

• •

This job was even shorter than last time, and the illustrations are the reason; but aren't they slick?

A church of a thousand seats and an equal area for institutional purposes for $300,000, St. Joseph's expresses in modern forms the time honored traditions of the Catholic Church. The structure is reinforced concrete from piers to tower finial, with walls, floors, stairs, beams and roof forming one monolithic mass. No veneers, no plasters are applied to any surfaces inside or out, and aside from good form lumber properly placed, no effort was made to conceal or enhance the marks left by the form boards.

ST. JOSEPH'S CHURCH, Seattle, Washington
A. H. Albertson, Architect
A. D. Belanger and Co., Contractors



E WALLS

modern desig

industrial plants, commercial buildings, skyscraper hotels,—all have been built beautifully and econom-

te. At least one es is shown effec- w booklet.

and good crafts- nterest architect,

If you have not yet received your copy, ask for it. Additional copies if you wish.

PORTLAND CEMENT ASSOCIATION • 33 West Grand Avenue • Chicago, Illinois

PRINTED IN U. S. A.